

# Notice of Allowability

Application No.

09/609,567

Examiner

Tuan V. Thai

Applicant(s)

BATEMAN, ROBERT D.

Art Unit

2186

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to request for RCE filed 09/07/04 and Examiner interview conducted 09/16/04.
2. ☒ The allowed claim(s) is/are 1-5, 7, 8, 13 and 17 renumbered as 1-9 respectively.
3. ☒ The drawings filed on 30 June 0200 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_

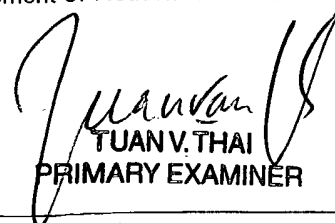
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
TUAN V. THAI  
PRIMARY EXAMINER

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Attorney's Docket No.: 042390.P9220

IN THE UNITED STATES PATENT AND  
TRADEMARK OFFICE

In re application of: Robert D. Bateman      Group: 2186  
Serial No.: 09/609,567      Examiner: Tuan Thai  
For: CACHE HAVING A PRIORITIZED REPLACEMENT TECHNIQUE AND  
METHOD THEREFOR.

EXAMINER'S AMENDMENT

1. An Examiner's Amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 C.F.R. § 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the Issue Fee.

2. Authorization for this Examiner's Amendment was given in a telephone interview with Mr. John Travis; Reg. No. 43,203 on September 16, 2004

3. The application has been amended as follows:

In the claims:

- a. Cancel claims 6, 14 and 19
- b. Please amend claims 1, 13 and 17 as follows:

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**Claim 1.** (Amended) A method for storing data in a cache comprising:

prioritizing a locked way of the cache higher than a recently used way;

prioritizing an additional locked way higher than the locked way;

setting a first bit to indicate priority of the locked way;

setting a second bit to indicate priority of the additional locked way; and

setting a third bit to indicate priority of [a] said recently used way[.];

wherein prioritizing the locked way, the additional locked way and the least recently used way includes setting correspondent bits in a register associated with said ways.

**Claim 13.** (Amended) A method comprising:

locking a first way of a cache;

locking a second way of the cache;

accessing a third way of the cache;

[using a first bit to prioritize the first way, a second bit to prioritize the second way higher than the first way, and a third bit to prioritize a recently used way.]

prioritizing said first way of the cache higher than a

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recently used way;

prioritizing said second way of the cache higher than the first way;

setting a first bit to indicate priority of the first way;

setting a second bit to indicate priority of the second way;

and

setting a third bit to indicate priority of the recently used way;

wherein prioritizing the first way, the second way and the least recently used way includes setting correspondent bits in a register associated with said ways.

**Claim 17.** (Amended) An apparatus [comprising a cache having a first way and a second way, the apparatus further] for locking and prioritizing data comprising:

[a circuit adapted to lock the first way and the second way and to prioritize the first locked way higher than the second locked way, the circuit further adapted to use a first bit to indicate priority of the first way, a second bit to indicate priority of the second way, and third bit to indicate priority of a recently used way.]

a central processing unit;

a cache memory having a plurality of ways coupled to said

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central processing unit;

a cache controller for locking a first way and a second way and for prioritizing the second locked way higher than the first locked way; wherein priority of the first locked way is higher than a recently used way;

a register having a plurality of bits for indicating priority associating with each way within said cache memory;

wherein said cache controller further setting a first bit in said register to indicate priority of the first way, a second bit to indicate priority of the second way, and a third bit to indicate priority of said recently used way.

#### REASONS FOR ALLOWANCE

4. The following is an Examiner's Statement of Reasons for Allowance:

The prior arts of record do not teach nor suggest, either alone or in combination, all the limitations of the claimed invention (claims 1, 13 and 17), particularly apparatus and method for locking and prioritizing data in a cache memory by locking a first way of a cache, locking a second way of the cache; accessing a third way of the cache; prioritizing the first way of the cache higher than a recently used way; prioritizing the second way of the cache higher than the first way; setting a first bit to indicate priority of the first way; setting a second

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bit to indicate priority of the second way; and setting a third bit to indicate priority of the recently way; wherein prioritizing the first way, the second way and the least recently used way includes setting correspondent bits in a register associated with the first, second and least recently used ways.

In light of the foregoing the claims of the present application are found to be patentable over the prior art.

Claims 2-5 and 7-8 further limit the allowable independent claims. These claims are therefore allowable for the same reason as set forth above.

Any comments considered necessary by Applicant must be submitted no later than the payment of the Issue Fee and, to avoid processing delays, should preferably **accompany** the Issue Fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan V. Thai whose telephone number is (703) 305-3842. The examiner can normally be reached on from 6:30 A.M. to 4:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mathew M. Kim can be reached on (703)-305-3821. The fax phone number for the organization where this application or proceeding is assigned is

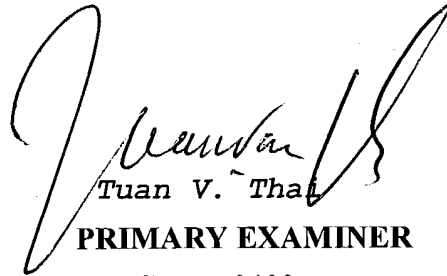
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703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TVT/September 16, 2004

  
Tuan V. Thai  
**PRIMARY EXAMINER**  
Group 2100